

Central Valley Flood Protection Board Update

August 28, 2015

Presented by:

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Today's Discussion

Where We've Been

- CVFPP Public Workshop Summary

Where We Are

- Hydrologic Variability/Climate Change Approach

Where We're Going

- Regional Flood Management Plan Integration



Where We've Been

CVFPP Public Workshop Summary



CVFPP Public Workshop Summary

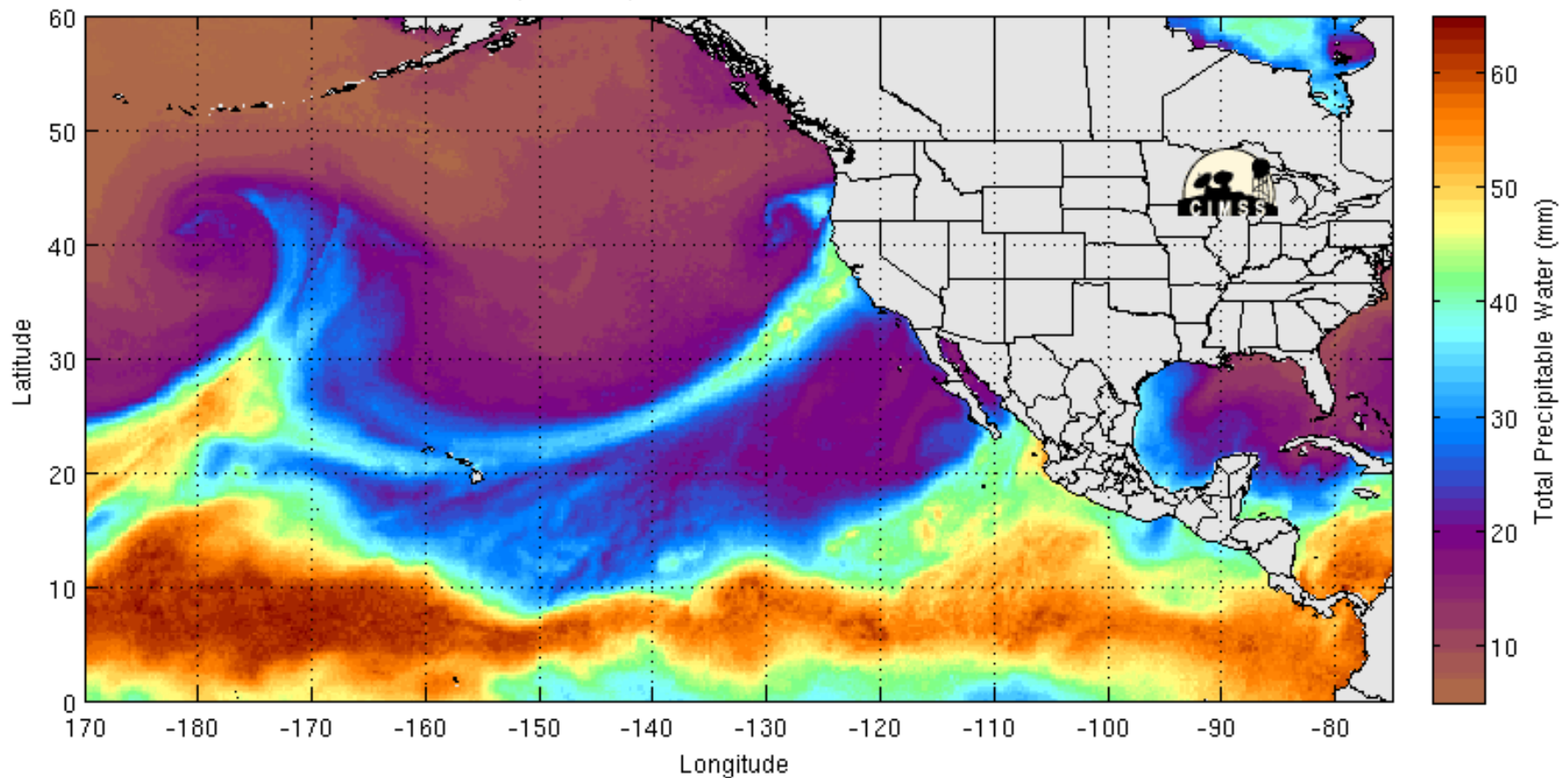
- Key comments
- Workshop summary now available:
www.water.ca.gov/cvfmp
- Review past presentations:
www.water.ca.gov/cvfmp/meetings

Where We Are

Hydrologic Variability / Climate Change Considerations for 2017 CVFPP Update

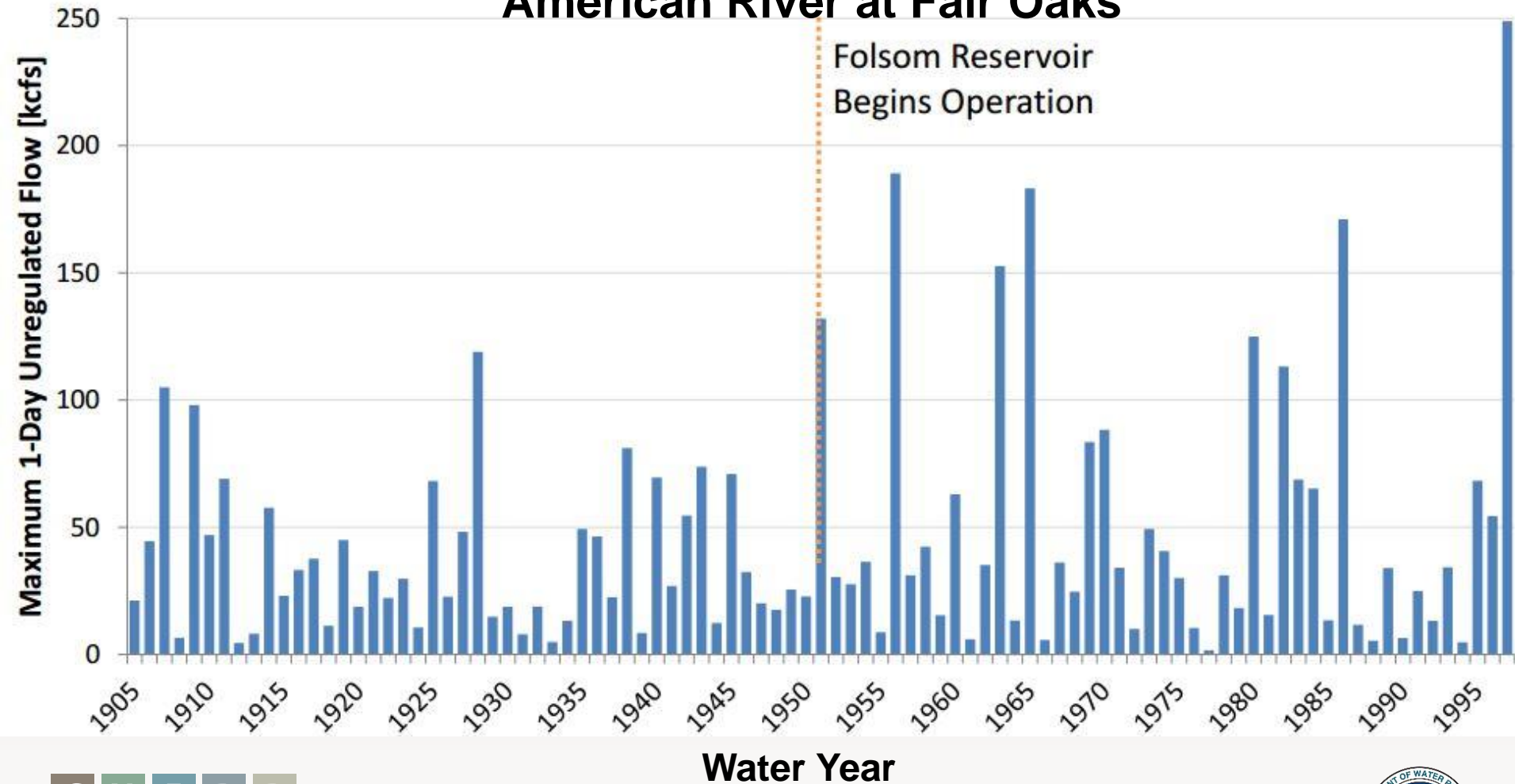
Hydrologic Variability Considerations

Morphed composite: 2014-12-11 11:00:00 UTC



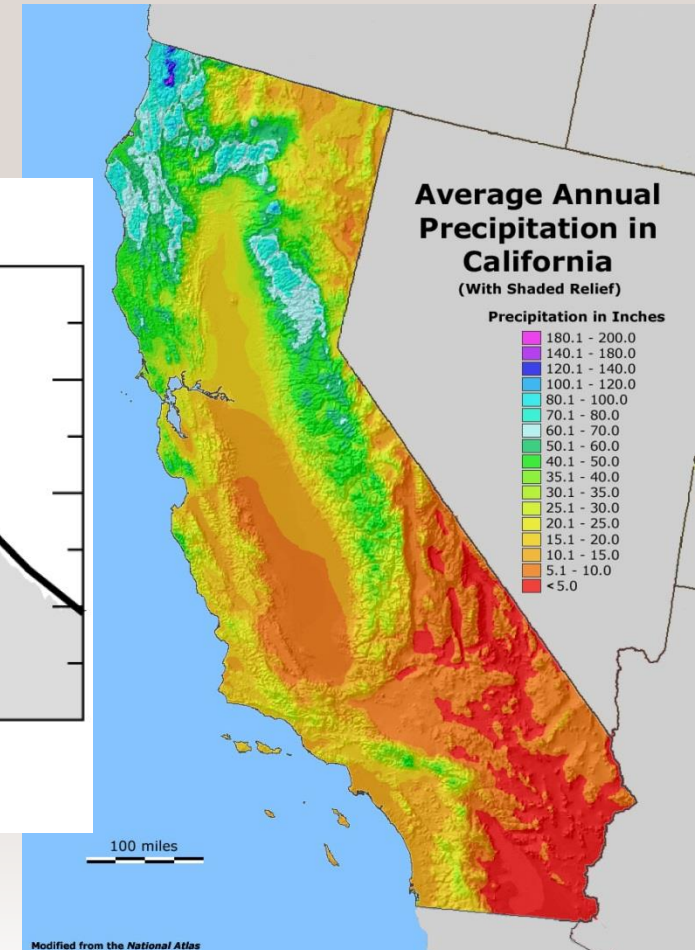
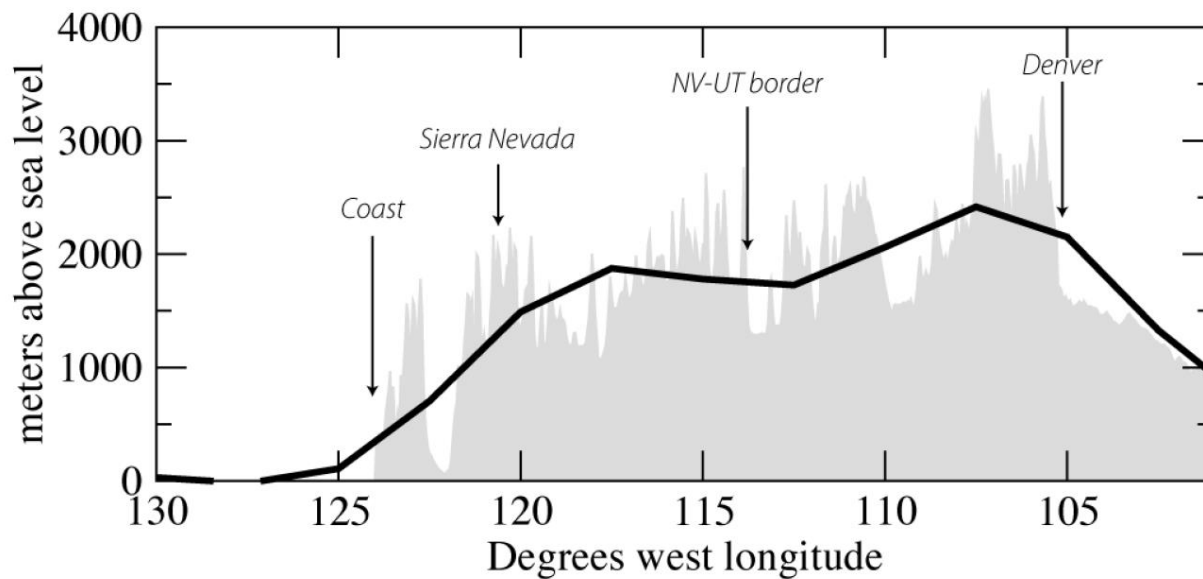
Hydrologic Variability Considerations: American River Example

American River at Fair Oaks



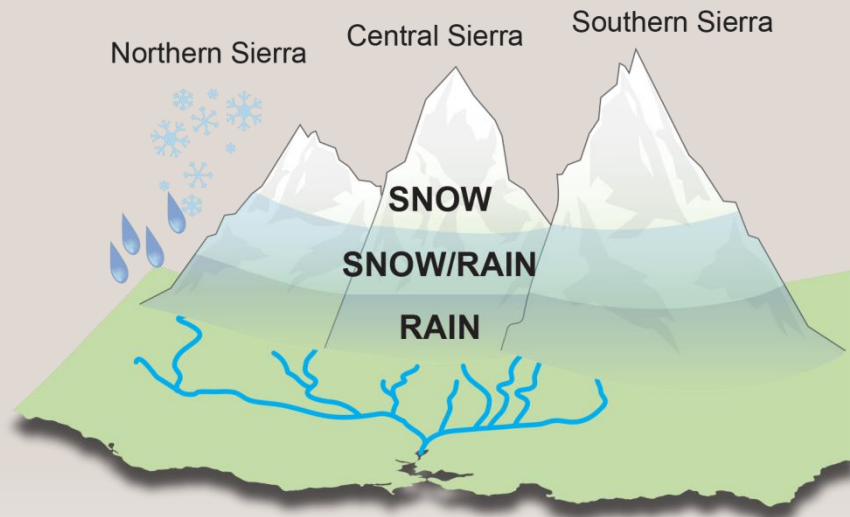
Importance of Sierra Nevada Range in CA Water Management

Figure ES-1 Cross-Section Showing Elevations along 40° North

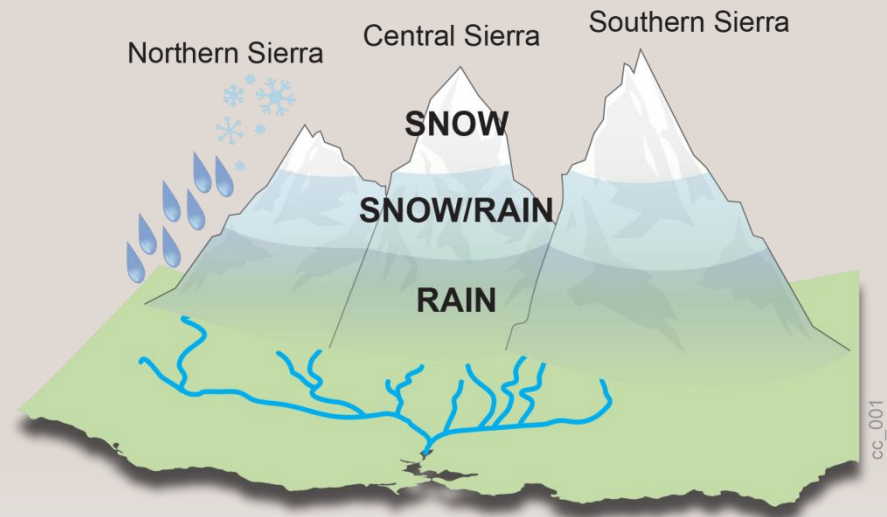


How Temperature Increases Influence Storm Runoff Volumes

CONCEPT GRAPHIC



Existing Rain / Snow Trends



Future Rain / Snow Trends

How Sea Level Rise Influences System Outflow

Estimates of Future Sea Level Rise in California

	Low	Mean	High
2030	4.3 cm	14.4 cm	29.7 cm
2050	12.3 cm	28.0 cm	60.8 cm
2062*	18.5 cm (0.61 ft.)	38.8 cm (1.27 ft.)	83.1 cm (2.73 ft.)
2100	42.4 cm	91.9 cm	166.4 cm



Climate Change Impacts

- Contributes to rise in extreme weather events
- Expected to generate more extreme floods, more seasonal rain, less snow and rising sea levels
- Increases stress on the system



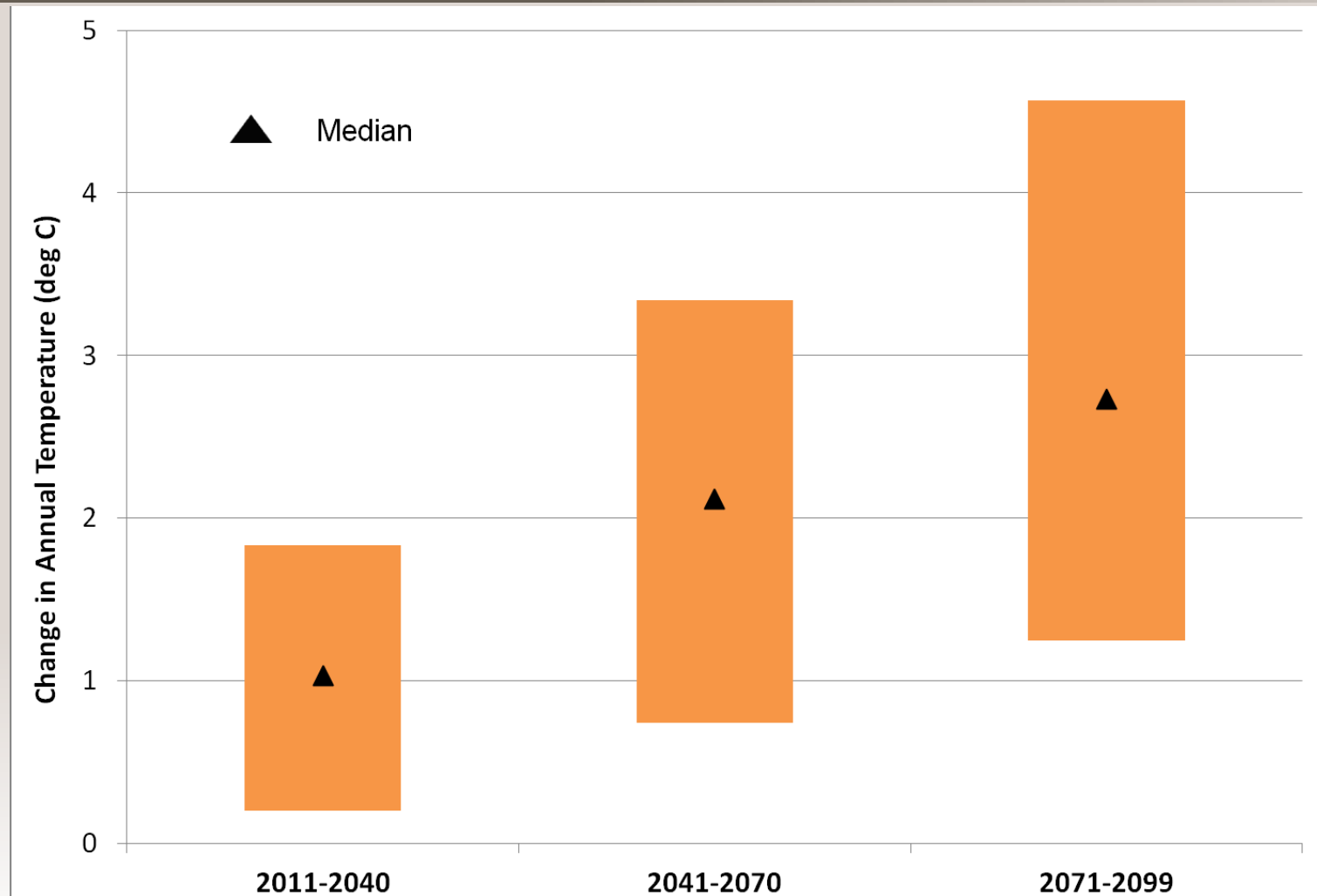
Climate Change Approach for 2017 CVFPP

- Multi-phased approach
- Uses latest science and data
- Integrates existing hydrologic and flood risk approaches
- Consistent with State's climate change policies

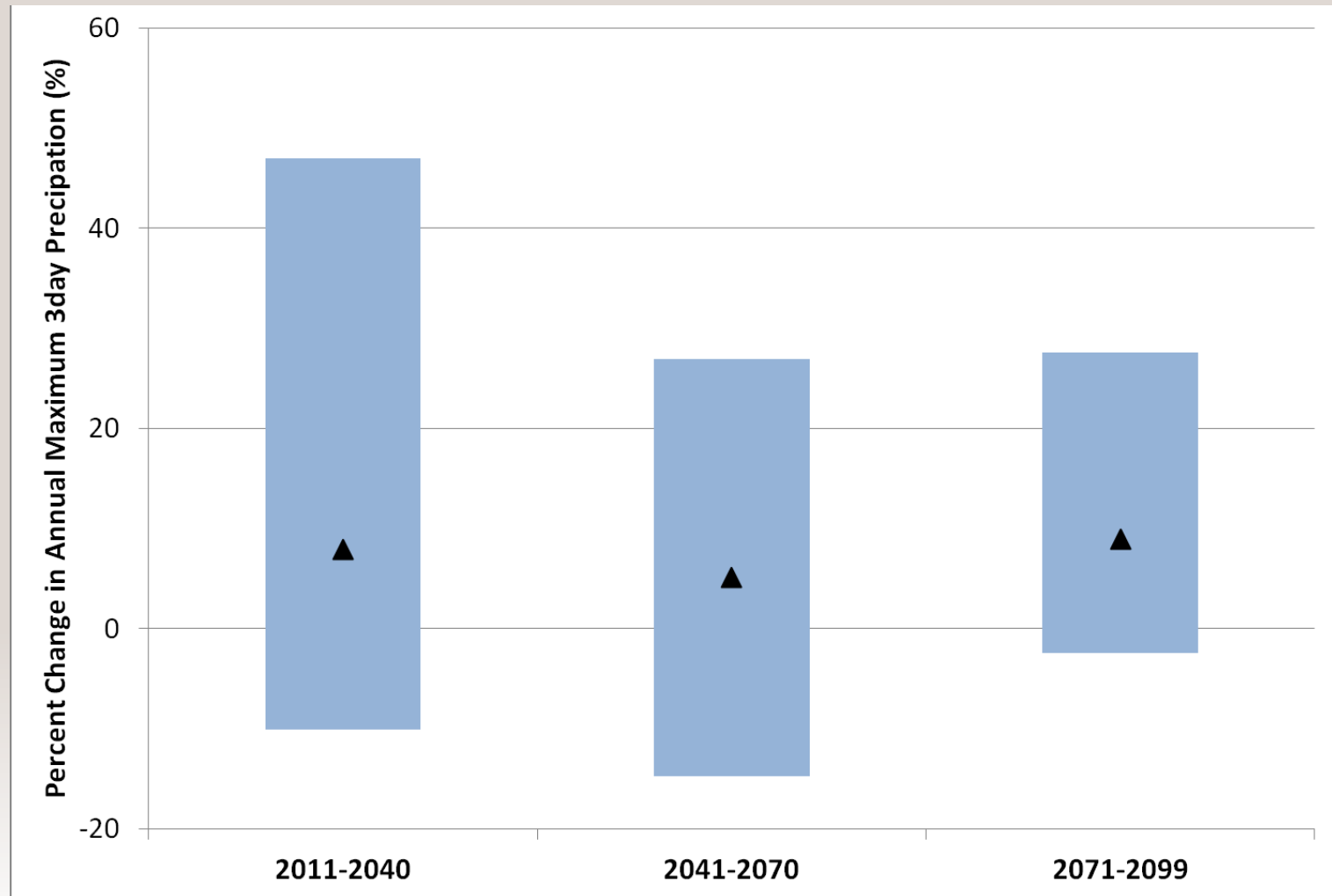
Refinement Using a Multi-Phased Approach

- Phase 1 – included in 2012 plan
- Phase 2a – 2007 global climate models, 112 independent climate projections
- Phase 2b – More robust analysis and integration; 2013 global climate models, 200 independent climate projections

Increasing Temperatures



Increasing Precipitation Extremes



Consistency w/ State Climate Planning Efforts

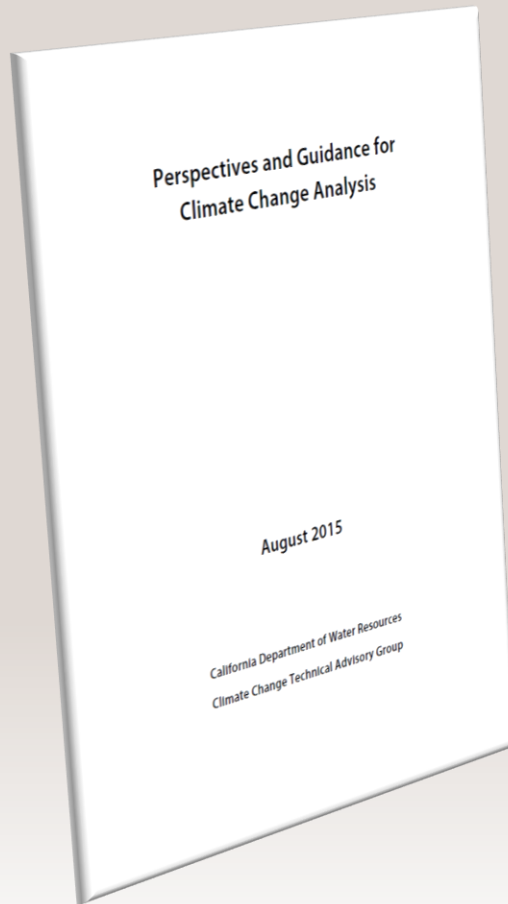
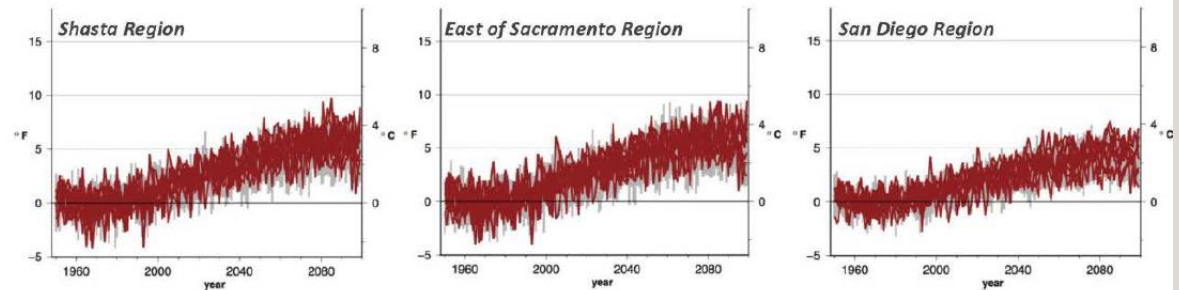
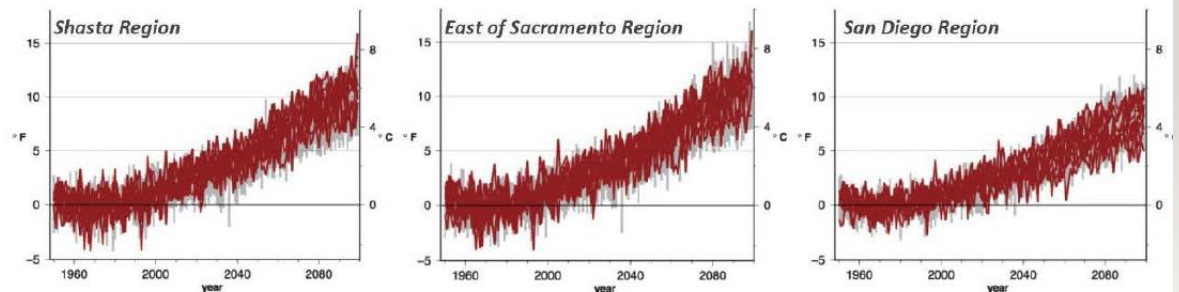


Figure 2-5 Annual Change in Temperature from GCM Simulations Relative to 1961-1990 Climatology

a) Lower Future Greenhouse Gas Scenario RCP 4.5



b) Higher Future Greenhouse Gas Scenario RCP 8.5



■ 10 selected GCMs [5-year smoothed (centered) annual time series]
■ Envelope of temperature change from 31 CMIP5 models

Consistency w/ State Climate Planning Efforts

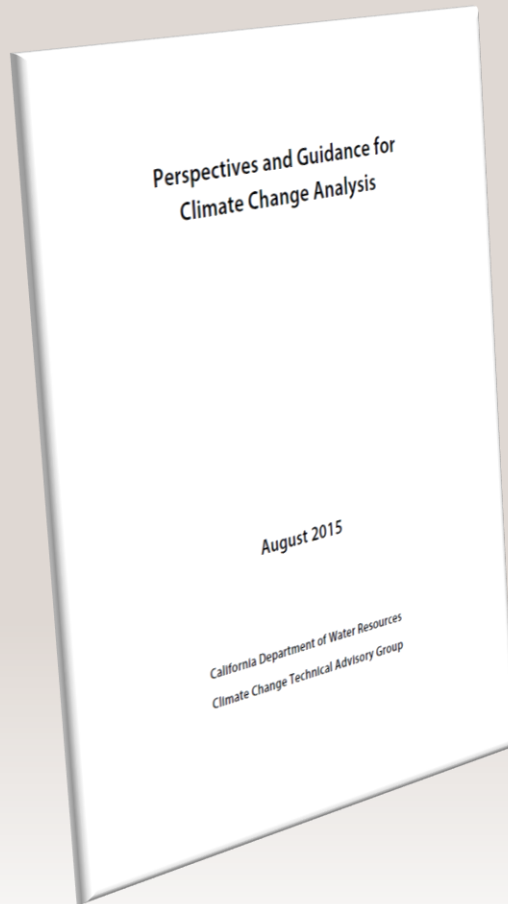
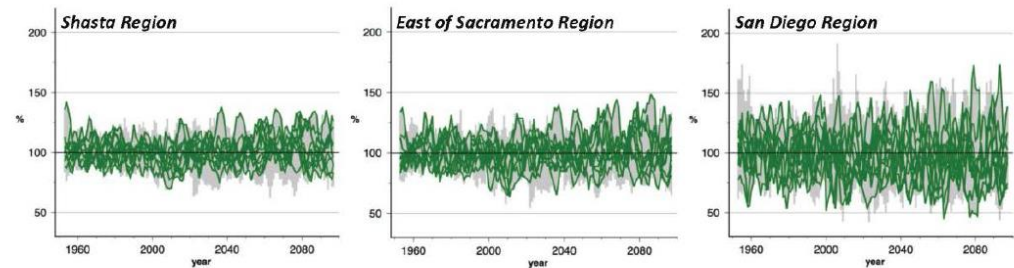
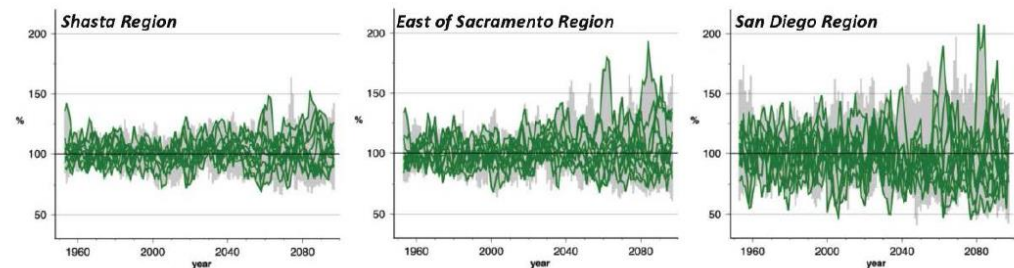


Figure 2-6 Water-Year Precipitation as the Percentage of Historical 1961-1990 Precipitation Climatology

a) Lower Future Greenhouse Gas Scenario RCP 4.5



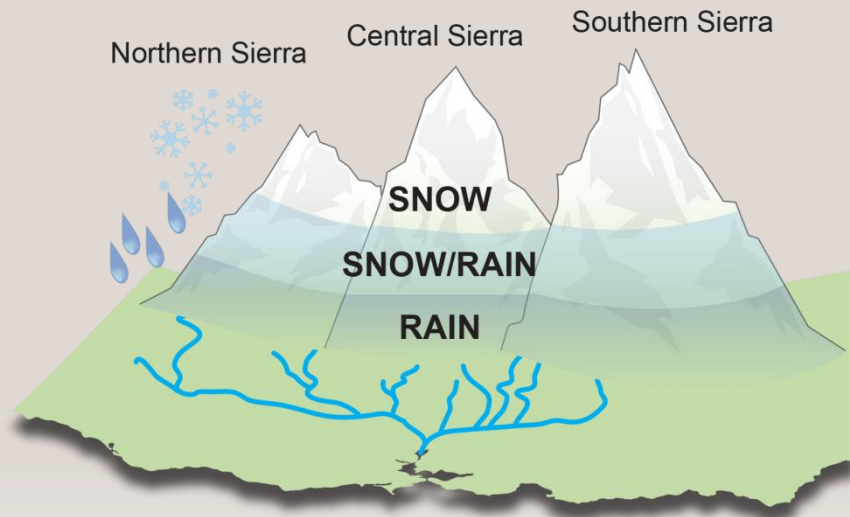
b) Higher Future Greenhouse Gas Scenario RCP 8.5



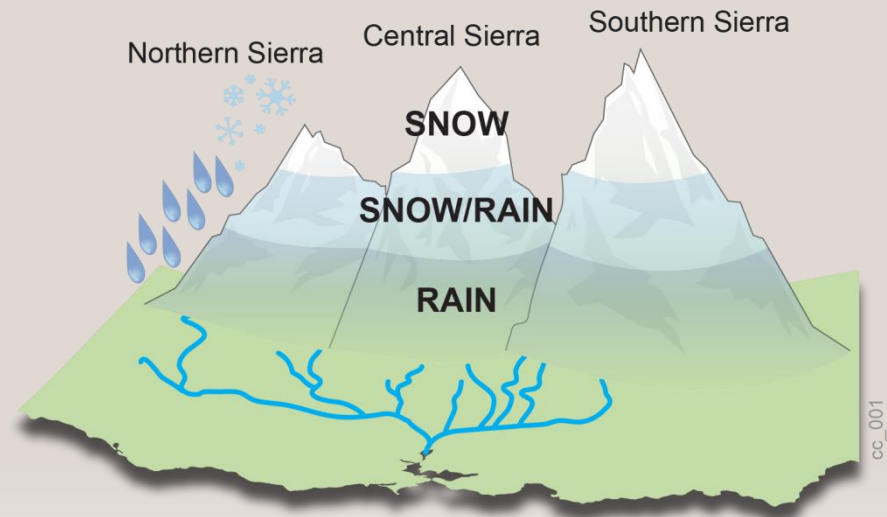
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How Temperature Increases Influence Storm Runoff Volumes

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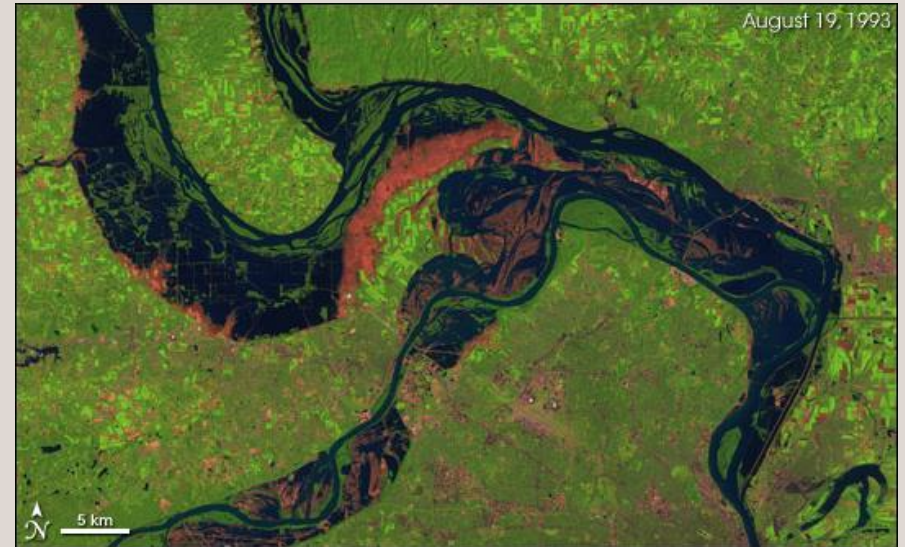


Existing Rain / Snow Trends



Future Rain / Snow Trends

Rise & Fall of Rivers: Mississippi River Basin Concept

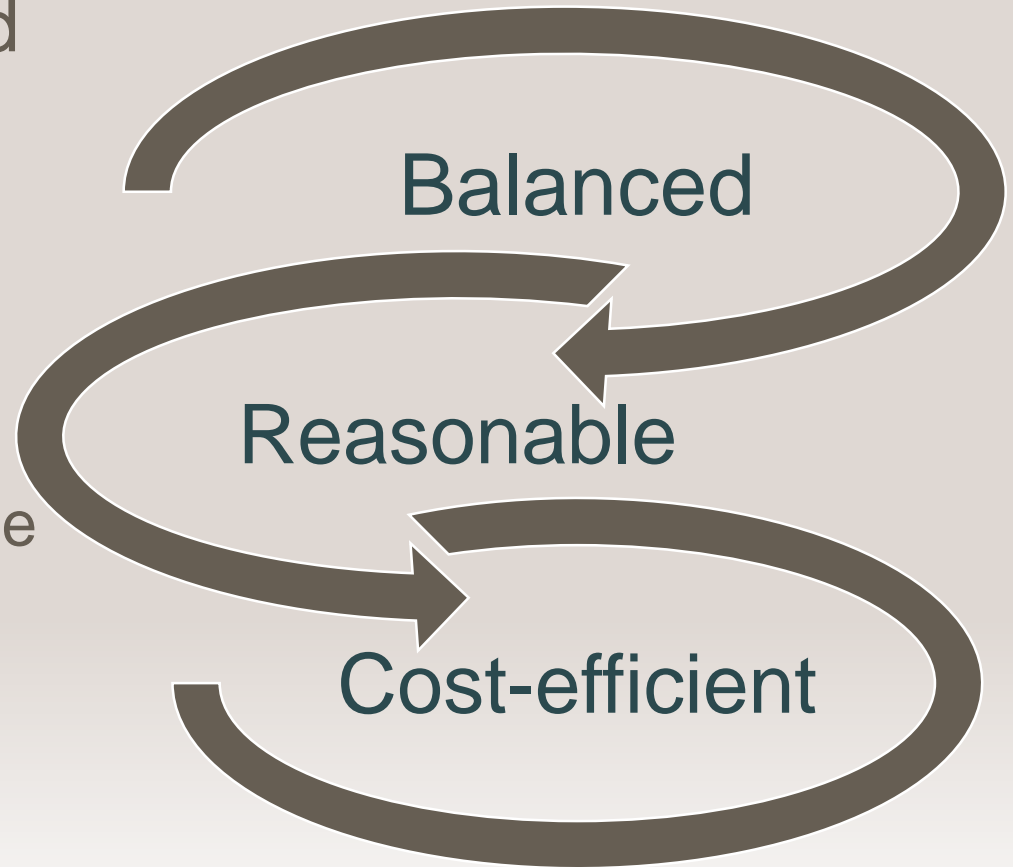


Satellite imagery of the confluence of the Missouri and Mississippi Rivers north of St. Louis, Missouri.

- ✓ Seasonal vs. Inter-annual Differences – Flow & Physical Footprint
- ✓ Floodplains Near Rivers Can Actually Be Higher Elevation than Flood Terraces

Attaining a Resilient System

- Goal is a resilient flood management system that:
 - Functions effectively over a long period
 - Can recover from large flood events
 - Addresses hydrologic variability climate change



Where We're Going

Regional Flood Management Plan Integration

Regional Flood Management Plan Integration

- RFMPs contain strong baseline dataset needed to build diverse portfolios of management actions.
- Working with regions to refine management actions, build portfolios to accomplish CVFPP goals and intended outcomes
- Taking advantage of the regions' hard work
 - Will be reflected in 2017 CVFPP Update
 - Shaping how the State articulates value of collective investments and need for sustainable funding solutions

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